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TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

No. 95

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WORLDWIDE REPORT

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SUB-SAHARAN AFRICA

BRIEFS

'PNA'-SPANISH NEWS LINK--The Philippines News Agency has signed a news exchange agreement with the Spanish news agency EFE in a move aimed at broadening PNA's international new links. It was the 15th such agreement concluded by PNA with different national news agencies in Asia, Latin America and Europe. The agreement calls for the exchange of news materials, features and newspictures between PNA and EFE and cooperative arrangements for their correspondents. The agreement was signed by Director Lorenzo Cruz of the Bureau of National and Foreign Information and also PNA chief editor, and Luis Maria Anson, president of EFE. [Text] [Manila PHILIPPINES DAILY EXPRESS in English 25 Sep 79 p 3]

CSO: 5500

CORRADO SPEAKS ON FUTURE COMMUNICATIONS DEVELOPMENT

Buenos Aires LA NACION in Spanish 23 Aug 79 p 14

[Article: "Corrado Spoke about the Future of Communications"]

[Text] "The most important fact that Argentina should pay special attention to in the next few years is the intellectual capacity of its professionals and technicians, in order to be able to choose accurately the proper structure that it must have for the purpose of meeting the increasing demand for services." This was pointed out by the secretary of communications, Brig Gen Eduardo O. Corrado, at the luncheon given in the American Club by the U.S. Chamber of Commerce in the Republic of Argentina.

General Corrado, who was introduced by Mr Alexander Perroy, Jr, chairman of the chamber of commerce, asserted that "research and development cost a lot of money, should be permanently maintained and have clear-cut objectives. In order not to forsake the obligation which countries have to face up to their own development, it is necessary to establish a standard of training of human resources in order to be able to choose at a global level what is most convenient for the country."

"Explosive growth"

With respect to the growth in communications traffic, General Corrado emphasized that "it will be explosive, at the national as well as at the international level, and therefore the planning of the various services to be offered in the future requires great imagination and the adoption of decisions that at a glance might seem to be far too excessive." He added that "traffic will grow not only because of the increase in population and the better standard of living, but also because of its greater use for activities which have not been foreseen to date." Next he said that "the telecommunications systems must be designed for a rational utilization of the information stored in data banks, in view of the fact that with the availability of a worldwide access, the overabundance of information stored at the national and international levels will render these services more onerous."

Finally he stated that "those countries which do not give any thought to these eventualities and do not attach to telecommunications and information the importance that they will have in the future as the means for the development of their activities will unfailingly be relegated to a secondary role in the realm of great decisions.

"Argentina has become aware of the importance of these technical advances," he added, "and it will be gradually incorporating these new possibilities into its infrastructure, experimentally at first, to try to succeed, via the most practical and economic decisions, with the proper development of the country."

8414
CSO: 5500

THIRTY THOUSAND NEW TELEPHONE LINES TO BE INSTALLED

Buenos Aires LA NACION in Spanish 1 Sep 79 p 7

[Article: "30,000 Telephone Lines Will Be Installed in Retiro"]

[Text] The National Telecommunications Company has been authorized to contract directly with Argentine Standard Electric for the supply and installation, as well as the placement in operation, of assorted equipment for a total of 30,000 private and 500 public telephone lines to be located in the Retiro exchange, at a total cost of 46,484,830 Swiss francs.

It was pointed out in previous estimates that it was necessary to replace the 20,000 lines of electromechanical type existing at the exchange and which have reached the limit of their usefulness. They all belong to a technology adapted to conditions that have been surpassed, it was explained, seeing that the installation was done on 24 February 1923 with equipment known as step by step.

At Berisso

"A telephone that does not operate represents losses to the country. Our goal is that there be less losses every day and, as a logical consequence, more satisfaction for the user." That was pointed out by the assistance manager of the National Telecommunications Company, Engineer Corps Col Santiago M Cabrera, at the inaugural ceremony of the 1,600 new telephone lines of the Berisso exchange.

Colonel Cabrera announced future projects for the area of La Plata and its environs, among which are the expansion of the Ensenada, City Bell, M B Gonnet and provincial capital exchanges, as well as of the radio link with Buenos Aires.

Finally he referred to the replacement of the interurban exchanges of Flores, Belgrano and Barracas, and to the decentralization of interurban calls.

Transfer at La Rioja

Through an agreement signed between the Army Communications Command and the National Telecommunications Company, the job of moving the long-distance telephone trunkline that links the provincial capital with the locality of Patquia will be started today.

The time to complete the job, which consists of the dismantling of the old line and the laying of a new telepone trunkline, was estimated at 120 days.

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BRIEFS

ARMY TO REPLACE LINE--La Rioja--The commanding officer of the Army 141st Telecommunication Company, Maj Nicolas Jordanoff, informed the provincial governor, Commodore Francisco Llerena (Ret), of the intention of the unit under his charge to replace the Patquia-La Rioja telephone link and the nature of the task to be performed. The current line runs along the old route that joins this capital with Patquia, a circumstance that made its repair and maintenance difficult. The 72-kilometer line that the Army will lay will run along the new course of National Route No 38. Work will begin on 3 September, but the inaugural ceremony of the undertaking will be held at the 25 de Mayo Square of this capital on 1 September. [Text] [Buenos Aires LA NACION in Spanish 24 Aug 79 p 17] 8414

NEW ENCOTEL BRANCH--The new building especially constructed for the local branch of the National Mail and Telegraph Enterprise (ENCOTEL) was inaugurated in Inriville, Cordoba Province. The one-story building contains 106 square meters of space where the public will be provided postal, telegraphic and monetary services. [Text] [Buenos Aires LA NACION in Spanish 23 Aug 79 p 14] 8414

ENTEL TO OPEN BID--In keeping with its plan to provide private service in the outskirts, the National Telecommunications Company (ENTEL) will open to bidding Public Auction No 186 on the 17th of next month, calling for the installation of underground conduits of polyvinyl chloride and cable ducts in the locality of Villa Ciudadela, Buenos Aires Province. The facilities will make it possible to install new cables to extend the telephone system to homes and interconnect exchanges, in addition to improve the service in the area in question. [Text] [Buenos Aires LA NACION in Spanish 23 Aug 79 p 14] 8414

NEW TELEPHONE SERVICE--The new automatic telephone exchange of Yapeyu, Corrientes Province, will be officially inaugurated together with the commemoration of the 129th anniversary of the death of the Liberator. The equipment of the new exchange, installed according to the terms of a new agreement signed between the local municipality and the National Telecommunications Company (ENTEL), will be put into service in the presence of Col Luis Alberto Amallo, general administrator of the ENTEL. The Siemens enterprise donated 50 of the 90 telephone lines installed. [Text] [Buenos Aires LA NACION in Spanish 16 Aug 79 p 16] 8414

CSO: 5500

DIRECT DISTANCE DIALING SYSTEM UNDER CONSTRUCTION

Havana BOHEMIA in Spanish 24 Aug 79 pp 16-23

[Article by Gregorio Hernandez]

[Text] World communications are playing an increasingly important role in the development of countries. Specifically, we can add that long distance calls, like transportation and electric energy, are one of the factors having the greatest impact on people's standards of living and the development of their economic and political programs.

For some time, principally in the industrialized countries, there has been progressive automation of the long distance telephone networks. And, following this international trend, in our country, too, work is being done toward this same goal. When the work is completed, we will be at the same level as the most advanced countries, with installation of the National Direct Distance Dialing System.

The explicit and implicit advantages of this system--a number of results are already being seen, not counting international aspects--among others derive from the fact that the economy of a country has a very close relationship with the development of its telephone and telegraph communications networks. In the case of our country, this is manifested in more effective operation and coordination in the application of the new system for managing the economy, through more rapid and efficient communications.

Moreover, it should be stated that a direct economic manifestation of the introduction of direct distance dialing is the fact that, even though the initial investments to implement the system are high, over the long-term they represent a savings.

In the political sector, the system facilitates coordination between the various levels of the present political-administrative structure because of the rapidity of service, the most eloquent example of which was the last elections of the People's Government throughout the nation.

From the social standpoint, direct distance dialing will ensure that the people's communications needs, both for emergency and personal calls, will be met in seconds at any hour of the day, independently of distance and the place in which the persons called is located, at a cost generally lower than present rates.

The Past

Before the Revolution, telephone service in Cuba was characterized by the lack of a national network consonant with existing demand. Requests for calls between towns were filled by operators who connected users: communication with the capital without the intervention of operators was only possible from Santiago de las Vegas.

This deficient service principally affected towns in the interior where, in most cases, even calls within the same locality required action by operators who put the calls through by means of magneto positions or central batteries.

This insufficiency of long distance networks brought about the initial investments, made during the revolutionary period, which were designed to handle the most urgent cases, with the most available means and within the framework of the nation's resources.

Among the noteworthy improvements, initiated in 1959, is automation of calls originating in towns near the city of Havana with all the telephones installed in the latter.

Progressively, in this way, the towns of Guanabo, Santa Maria del Mar, Tarara, Cotorro, San Jose, San Antonio de los Banos and Guines were incorporated into the 07 direct distance dialing system. This was established with an area code which had to be dialed or used to obtain access to telephones in the capital. The technology which served as the basis for this system was acquired from the Hungarian People's Republic.

Along with the above-mentioned procedure, the long distance capacities of circuits between cities of the provinces and the city of Havana were expanded. To this end, direct distance dialing was introduced, by means of which the operators of one town dialed the numbers of telephones in distant towns. These advances resulted in a 10-percent annual increase in long distance telephone traffic between 1959 and 1973.

A more accelerated development of the long distance networks was initiated at that very moment, which was an intermediate phase of preparation for the total automation of our country's telephone traffic.

In 1974, long distance automation was instituted between towns on the Isle of Youth and between the latter and Havana. Also, in 1974 and 1975, calls originating in the principal municipalities and towns of Pinar del Rio Province were automated, as were those from the latter to Havana. This permitted

all telephones in Pinar, Consolacion del Sur, San Andres, Puerta de Golpe, Alonso Rojas, San Juan y Martinez, Matahambre, La Coloma, San Luis, Vinales, Ovas and Bahia Honda to communicate directly with one another and to make most of their calls to the city of Havana without the intervention of operators. Later the automation process involving calls in Pinar del Rio Province was completed with the extension of service to Guane, Mantua, Sandino, San Cristobal, Candelaria and Los Palacios.

As is apparent, this progressive development phase of a National Direct Distance Dialing System could not be limited to the westernmost part of the country. Automation was simultaneously introduced for calls from the cities of Matanzas and Varadero with the city of Havana. This technology was also introduced between Sagua la Grande, Calabazar de Sagua, Sitiecito, Cifuentes, Quemado de Guines, Corralillo, Rancho Veloz and Isabela de Sagua. We should also include the automation of calls between Caibarien, Vueltas, Camajuani and Remedios, and that existing between Moron, Chambas, Florencia and Tamarindo and between these towns and Ciego de Avila.

We could also add that calls were automated between Guaimaro and Santa Cruz del Sur and Camaguey. A little later, this technology reached the eastern provinces with the introduction of direct distance dialing between Banes, Antilla and Deleite. This system was also in operation between Mayari, Alto Cedro, Cueto, Guaro, Sagua de Tanamo and Felton and between these towns and Moa and Nicaro.

These changes in the direct long distance dialing systems were accompanied by expansions and modernizations of local telephone centers, as many of them had magneto and central battery manual telephones. Up to that time, the intercity network of circuits was basically organized in a manner similar to that which existed in the country's previous political-administrative structure. That is, there were groups of direct circuits from each municipality to its old region; this, in turn, had hookups with its provincial administrative center and the provincial administrative center with the national capital.

Because of this, the division of the country into 14 provinces required suitably structured efficiency in the long distance calls network. In 1977, responding to this need, work was started on the installation of a modern microwave system which made available 960 additional long-distance telephone channels among the new provincial administrative centers and between them and the city of Havana.

As the result of these investments, the total number of long distance calls made in 1978 was seven times greater than in 1958 and, these long distance calls made directly by the caller without the help of operators were three times greater than the total calls made in 1958.

These technological changes between municipalities and provincial administrative centers and between provincial administrative centers and the capital of the country will also be introduced in the other direction; i.e., callers from

the city of Havana with the rest of the nation, an achievement which will be possible through the installation of a coaxial cable and the placing in operation of a secondary level central (tandem) office in the Havana metropolitan area, which will practically complete the intermediate phase of the Direct Distance Dialing System.

Subscribers in the interior, who now communicate with the capital through the 07 Service, will be connected to the above-mentioned central office, which will ensure transmission of a quality superior to that now available.

Among the cities with which callers from the city of Havana will have direct access are all of the provincial administrative centers and the special municipality of the Isle of Youth, as well as Artemisa, Guanabo, Santiago de las Vegas, Cardenas, Varadero, Manzanillo and others which have high levels of traffic.

This operation, which will be initiated with the installation of the Havana Tandem Office, has broader objectives: complete automation of the national long distance calls system, as a function of the National Direct Distance Dialing System.

We wish to note that in other countries the installation of distance dialing has been done gradually. As for Cuba, we can say that the present capabilities of the equipment purchased for the establishment of this system will ensure that in 1985 no less than 85 percent of the intercity calls will be placed directly.

Moreover, it is noteworthy that automatic long distance service will also be accessible to callers who do not have telephones, through the installation of public direct distance dialing telephones which, after deposit of the proper amount of money, will permit communication with telephones in other towns. This would be done in a manner identical with the service provided in Varadero, from which point it is possible to call directly to Cardenas, Matanzas and Havana.

How does direct distance dialing operate?

We all know that when the operator handles the placing of a long distance call in the traditional manner, the caller tells her the town and the telephone number of the persons with whom he wishes to speak. However, in direct distance dialing, the calls are made without the help of operators; and information concerning the town and telephone is supplied through the dialing process itself to automatic equipment that takes care of selecting the route which will permit the quickest hookup with the town in which the desired telephone is located, after which the telephone of the person for whom the call is intended is selected out of all the telephones in that town.

For example, using the traditional method, let us say that someone in Puerto Padre wishes to call Pinar del Rio, he has to call his local operator who in turn calls the Tunas operator. The latter calls the Havana operator who will connect her with the Pinar city, thus establishing the telephone hookup with Puerto Padre.

Now, this same call, through the direct distance dialing system will follow these steps: the Puerto Padre caller will dial the number 06 informing the automatic telephone center to which he belongs that he is placing a long distance call. Next the caller dials the number which identifies the code of the area in which the person lives with whom he wishes to talk (Pinar del Rio, following the previous example), as every area or part of the country will be assigned a number for long distance calls from other areas.

And, continuing the example, the caller will directly dial the number of the telephone with which he wishes to communicate. This call, which originated in Puerto Padre, will be put through to the administrative center of the province (Las Tunas) by the automatic equipment installed in the city of origin. From Las Tunas, the call will also be handled automatically and placed with Havana and then with Pinar del Rio.

This entire operation will take place in the time required for the Puerto Padre caller to dial the numbers to which we have referred, that is, the call to Pinar del Rio will be placed in under 10 seconds.

Counting Meter

The method of determining the charge for a call will also be automatic. To determine the number of long distance calls made, the time used on these calls and the rates for the places called, every subscriber will have a "counting meter" tied into his telephone and located in his central office. This meter will record "units" based on the number of calls made during the month, places called and time of the conversation. Each "unit" recorded by the meter will be worth 5 centavos.

Let us say that a subscriber in one location makes a call one month to another location for which the charge per minute of conversation is 1 peso ($1.00) and that he talks for 5 minutes. In this example, the "counting meter" of the caller advances one unit every 3 seconds and in the 5 minutes of conversation advances 100 units, that is, he would be charged 5 pesos ($5.00).

The speed at which the "meter" operates naturally depends upon the place called and the rate applicable to it. In all cases, the rates will be the same as or less than those now applicable.

Operators

Does the implementation of the direct distance dialing system mean that the operators now doing this work will disappear?

To this question we can reply that international experience has shown that even in countries where long distance calls have been completely automated operators are maintained in the principal cities and towns to help callers who have difficulties in completing their calls. They will also handle calls charged against a telephone other than the one from which the calls are placed (collect calls), other calls made from public telephones or calls which are intended for a specific person (person-to-person calls), as well as other duties such as information service for telephone numbers with which the caller wishes to be connected but does not know, among others.

With respect to the information service, we should point out that a modern system has already been installed which will be operational at the beginning of the year. This will permit callers throughout the country to obtain information in their own towns in less than 10 seconds concerning the numbers of telephones installed in any other town with which there is automatic communication.

The providing of this service means that in the future there will be a need for at least 20 percent of the operators now in the long distance service.

In a related connection, in its initial stage, the establishment of international communications in a semiautomatic form is not far behind. This means that the operator of this service will directly dial the numbers of telephones in other countries without the need for operators in these countries to intervene. At present, our international service is using these facilities with various nations of Europe, Africa and Latin America. This has been made possible by the placing in operation of the Caribbean Earth Station and, more recently, of the international communications center with a 120-line capacity.

These, in broad brush, are the most noteworthy and interesting aspects for the reader of the new automatic long distance telephone calls system which is being installed throughout the country and which doubtless is one more effort by our revolutionary state to ensure the highest degree of development of our country's communications network.

The Coaxial Cable in Direct Distance Dialing

To expand on the information provided concerning the coaxial cable, we might add that it consists of a kind of pipe 1,000 kilometers long with a central wire supported by electric insulator spacers. This cable is a combination of four conductors of this kind which will link the entire island, from Pinar del Rio to Guantanamo, with contacts in all the provinces.

It will be possible to transmit 960 telephone calls simultaneously over each of these four conductors, or television programs and telegraph messages. The Soviet Union's cooperation was decisive at each stage of this project's implementation, ranging from exploration of the land in which the cable is being buried to the construction, assembly and eventual start up of the entire system.

Preliminary Plan of the Cities Which May Be Dialed Directly by Callers in the City of Havana

Pinar del Rio
Artemisa
Bauta
San Antonio de los Banos
Quivican
Batabano
Jaruco
Guira
San Jose
Guines
Cotorro
Guanabo
Santiago de las Vegas
Isle of Youth
Matanzas
Jovellanos
Cardenas
Colon
Varadero
Santa Clara
Sancti Spiritus
Cienfuegos
Camaguey
Ciego de Avila
Santiago de Cuba
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TECHNICAL FACILITIES FOR THE OLYMPICS RADIO AND TELEVISION COMPLEX

Moscow TEKHNIKA KINO I TELEVIDENIYA in Russian No 8, Aug 79 pp 55-58

[Article by V. R. Yesin, V. F. Krylkov and I. A. Rosselevich]

[Text] By publishing the article "Technical Facilities of the Olympics Television and Radio Complex," the journal is opening a new column in which it is planned to consider in detail the technology and to provide the equipment for preparation and conducting broadcasts from the XXII Olympic Games. The purpose of the planned articles is to acquaint specialists and interested readers both with the structure and technical state of the entire complex of the Olympics Radio and Television Center and with the individual services, apparatus and subassemblies of the OTRTs. The Olympic games have become a "test area" during the past few years where the latest apparatus and systems of broadcast equipment and television equipment were tested extensively, which then entered the daily practice of television, radio broadcasting and cinematography. The interest of specialists not only of our country but also abroad in the Olympics Radio and Television Complex is explained largely by the fact that the OTRTs will become the first large broadcast complex, the basic equipment of which is third-generation apparatus. The Moscow Olympic Radio and Television Complex considerably surpasses the complexes utilized at Munich and Montreal by the number of created programs, the volume of equipment use and other parameters. Articles under the heading "The Television and Movie Equipment of the 'Olympiad-80'" will be published regularly and will be completed by the results of work already done. The leading specialists of the country directly involved in development of the OTRTs will be the authors of the planned articles.

Creation of 20 national programs by foreign companies and 3 Soviet programs is envisioned during the Olympic Games in Moscow. The programs from Moscow will be broadcast over the air waves and through communications lines both

in the direct relay and in the recording mode. To ensure that television and rebroadcasts are conducted at a high technical level according to the requirements placed by international broadcasting organizations, it was necessary to develop an enormous system of universal technical facilities and to provide clear interaction of the separate parts of this system.

The developed Olympic Radio and Television Complex in Moscow consists of three main large parts: the Olympics Radio and Television Center (OTRTs); stationary television and radio broadcast equipment at sports facilities; and mobile and reportage television and radio broadcast facilities which provide transmission both from the sports facilities and from other objects (streets and towns). As can be seen from the drawing, the television and sound equipment equal in volume to several large television centers must be developed, manufactured and put into operation within compressed deadlines. Thus, for example, the apparatus-program block is contained in the Olympics Radio and Television Center 21, whereas similar apparatus-program blocks 7 in designation are contained at the existing television center at Ostankino. A total of 33 types of different television equipment complexes has been developed for organization of television broadcasts from the Olympic Games.

This amount of equipment could not have been developed and manufactured within the established deadlines if development of the new "Perspektiva" third-generation television equipment had not been first completed. It was this that was the basis of all the developed apparatus complexes. However, taking into account the specific technology of Olympics broadcasting, only two types of apparatus (APB [Apparatus-program block] and PTS [Portable television station]) could be borrowed almost completely, while 24 types of apparatus were newly developed. Seven types of apparatus were partially or completely purchased abroad.

The main apparatus of the OTRTs include: the color TV apparatus-program blocks designed to formulate completed finished programs from signals of their own sources, the sources of centralized television and movie and video magnetic recording blocks and external program sources. These blocks are the most widespread type of apparatus. The apparatus-program blocks (APB-TsT) installed in the OTRTs building jointly with the self-contained television and movie apparatus TKA-B, comprise the apparatus-program complex of the APB-B and are leased to foreign companies.

Apparatus-program blocks of type APB-A have been developed for international broadcasting organizations and foreign companies performing a large volume of broadcasting. These blocks are a complex of production facilities which are a self-contained two-program center within the OTRTs. The APB-A contains two studios, two producer control rooms, movie and television projection room, magnetic video recording control room and two engineering control rooms.

The self-contained television and movie control rooms TKA-A and TKA-B are designed to create color television movie programs recorded on 16-mm movie film. The TKA-B contains one 16-mm movie projector and one slide projector, while the TKA-A contains five 16-mm movie projectors and three remote slide projectors.

The centralized television and movie block is designed to create color TV movie programs recorded on 16- and 8-mm film. It includes three control rooms containing six 16-mm television and movie projectors and one control room with three 8-mm movie projectors. The control rooms are controlled from the TsTKB dispatcher's console.

A special complex -- the block for commentary from the picture tube screen (BKEK) -- has been designed for countries utilizing finished programs and not leasing commentator sites at the sports facilities. It consists of 70 booths with commentator seats and a distributing apparatus control room and is used to make commentaries of TV programs from the picture tube screen.

Control of issuance of programs to the final commutation center (OKTs) of Minsyvaz' [Ministry of Communications] is accomplished by the control rooms of the program issue dispatchers (AD), containing the remote control apparatus complex of the commutation arrays of the central apparatus control room and TsVKU rack on which the correctness of the commutations made is monitored.

The control room of the information program distribution dispatcher develops information programs and presents them to TV commentators at the sports facilities in the BKEK and other stations (press and so on) for information about timely events at the sports arenas.

The control room of the main program and technical coordinators is designed for production and technical monitoring of programs and signals from external sources (from sports facilities) and for coordinating the operation of mobile TV stations.

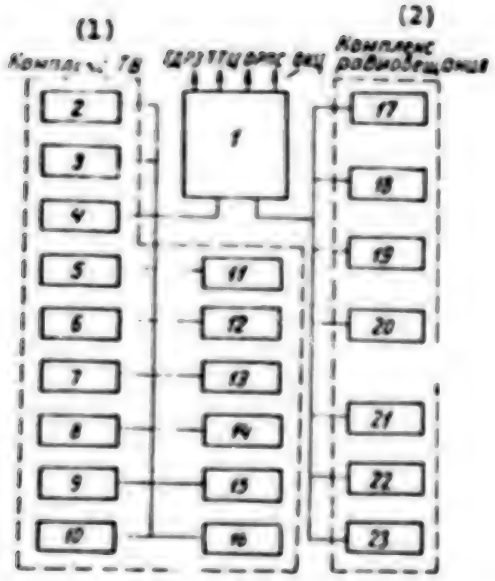
The OTRTs center is the central control room (ATs), which is used for automatic reception, distribution by requests from the APB and other instructions and also for monitoring signals of all sources used for development and distribution of Olympic programs.

The television switching-distributing control room receives all signals of the TV commentator channels, communications lines and intersound from all the sports facilities and distributes the commentator channels over the commentator lines.

The branch and expanded internal TV and audio network of the OTRTs is designed to distribute information and outgoing programs through editorial and engineering rooms.

The monitor-dispatcher booths provide monitoring of the TV channel parameters by the signals of test lines, monitoring of level parameters of the complete color TV signal and visual monitoring of the quality of the incoming programs.

The technical monitoring booths are designed for prestart monitoring and display of the results of measuring the level parameters of the complete color TV signal of the outgoing programs of the OTRTs central control room during



Olympic Radio and Television Complex: 1 -- central commutation control rooms; 2 -- APB-B apparatus-program block (15 sets); 3 -- APB-A apparatus-program block (3 sets); 4 -- control room of finished program dispatcher (3 sets); 5 -- control room of information program dispatcher; 6 -- central television and movie block; 7 -- video recording control room (6 sets); 8 -- slow motion and replay control room; 9 -- video recording installation control room; 10 -- video and sound mixing control room; 11 -- video recording reproduction control room; 12 -- block for commentary from picture tube screen; 13 -- technical monitoring block; 14 -- internal TV and audio network control room; 15 -- program and technical coordinator control room; 16 -- Eydofora control room; 17 -- apparatus-program block (70 sets); 18 -- commentator radio broadcast recording control room (2 sets); 19 -- commentator radio broadcast reproduction control room (6 sets); 20 -- radio broadcast installation control room (30 sets); 21 -- technical monitoring block; 22 -- program issue department (4 sets); 23 -- volume monitoring control room

Key:

1. TV complex
2. Radio broadcast complex

transmission, visual monitoring of the TV picture and the forms of this video signal and also visual and audio monitoring of the sound accompaniment signal parameters.

A number of secondary control rooms such as commentator recording control rooms, VTZS control room and so on, is also provided at the OTRTs.

The main technical means of preparing television information from the sports facilities are mobile TV stations PTS-TsT, Magnoliya-M and Magnoliya-80. Each of them has four TV cameras. All the programs formed in the PTS are transmitted to the central control room of the Olympic Radio and Television Complex. The number of PTS produced specially for the Olympics and designed to operate at different sports facilities and other relay points comprise 40 sets. Besides the PTS-TsT, PTVS-ZTsT and PVS-4 mobile TV video recording stations will be used at the sports facilities.

The PTVS-ZTsT contains three cameras and a Kadr-ZP video tape recorder. When working jointly with the Magnoliya PTS-TsT, the TV signals from the PTVS-ZTsT can be transmitted to the television center through the PTS-TsT radio line. Communication of the PTVS-ZTsT with the television center can also be accomplished over lines of Minsvyaz'. PVS-4 mobile video recording stations are used to record TV information from the output of the PTS and for subsequent recording reproduction when connected to the PTS or at the television center.

Ten types of special TV engineering control rooms and control room subcenters, installed at the sports facilities, have been developed to gather TV information transmitted by the mobile stations and to process the TV signal and to distribute it. A special TV control room and audio network provided at each sports facility serves to receive and distribute 12 wireless information programs and their own programs at the commentator positions.

The commentator complex contains 1,290 positions designed for commenting on TV and radio broadcast sports transmissions from the locations where the competitions are held. Each commentator position is designed for two commentators. Every six commentator positions are serviced by an engineering control room.

The TV equipment of Olympiad-80 exceeds the equipment used at previous Olympiads in volume and innovation. Whereas there were 11 apparatus-program blocks (APB) at Munich (Table 1) and 12 at Montreal, there will be 21 APB at Moscow. Thus, the number of programs which will be formulated for transmission to all continents of the world will almost double at the Olympiad-80.

A total of 27 mobile TV stations (PTS) was used at Munich, 28 were used at Montreal and there will be more than 40 at Moscow. The total number of stationary cameras used at Munich was 130, 152 at Montreal and there will be 280 at Moscow. A total of 62 television and movie and slide projectors will be used at Moscow, whereas they comprised 20 and 11, respectively, at Munich

and Montreal. Whereas there were 850 commentator positions at Munich and 700 at Montreal, they will number 1,290 at Moscow.

Table 1. Amount of TV Equipment at Summer Olympic Games

(1) Тип оборудования	(2) XX Олимпиада, Мюнхен, 1972 г.	(3) XXI Олимпиада, Монреаль, 1976 г.	(4) XXII Олимпиада, Москва, 1980 г.
Спортивные площадки (5)	34	20	23
Формируемые программы (6)	13	17	20
АПБ (7)	13	17	21
ПТС (8)	27	28	40
ПТВС и ПВС (9)			33
Стационарные камеры (10)	130	152	180 КТ-132 100 ТГУ-1515
Репортажные камеры (11)	5	10	20
Телевизионные и диапроекторы (12)	20	11	62
Видеомагнитофоны (13)	85	126	196
Комментаторские установки (14)	850	700	1290
Источники формируемых программ (15)	50	100	150

[1] Second-generation equipment.

[2] Third-generation equipment.

Key:

1. Type of equipment
2. XX Olympiad, Munich, 1972
3. XXI Olympiad, Montreal, 1976
4. XXII Olympiad, Moscow, 1980
5. Sports sites
6. Formulated programs
7. APB
8. PTS
9. PTVS and PVS
10. Stationary cameras
11. Reportage cameras
12. Television and movie and slide projectors
13. Video tape recorders
14. Commentator installations
15. Program information sources

Unlike the previous Olympics for which the equipment available at the broadcast companies was mainly used and only individual devices were specially developed, the majority of TV equipment, as noted above, was newly created on the basis of third-generation apparatus for the Moscow Olympics. A modern high technical level of relays will thus be provided.

Based on the Olympic regulations adopted by the organizing committee of Olympiad-80, the schedule of holding the events in different types of sports and the technology of TV transmissions and program formation adopted by State Television and Radio of the USSR, we formulated jointly with Gosteleradio of the USSR the technical-operational requirements on TV equipment. According to these requirements, the equipment should provide:

transmission of TV picture signals and sound accompaniment from the sports facilities or other locations of holding competitions by transmission of TV signals and sound accompaniment signals to the program formation and distribution center (OTRTs);

development of a finished program at APB with the use of direct reports, signals from the local studio, television and movie projection apparatus and a video recording block;

reportage from local commentator booths from the picture of the television screen;

recording the TV signals of direct reportage and finished programs formulated by APB on magnetic tape;

putting the video recordings together into a finished program;

reproduction of finished programs recorded in the video recording block for the user countries;

development of information programs for distribution of them to commentators from the Moscow sports facilities;

distribution of service TV signals with sound accompaniment through the OTRTs building and throughout the sports facilities using internal sound apparatus and the TV network;

objective monitoring of the TV signal parameters and sound accompaniment signals;

commutation and distribution of TV signals, sound accompaniment signals and service signals coming from the signal sensors, to users for selection of the user or according to a previously given program;

commutation of TV signals, the signals of commentators from the sports facilities and booths of commentators (bKEK) and intersound signals to the Olympic Commutation Center of Minsvyaz' of the USSR through the program dispatcher control rooms;

loudspeaker service communications.

The equipment should be supplied with power from an AC network of 220 V $\pm$ 10 percent with frequency of 50 Hz $\pm$ 0.22 Hz. The given equipment parameters should remain within the tolerance limits over a temperature range of 20 $\pm$ 5°C and relative humidity up to 80 percent, measured at temperature of +20°C and at atmospheric pressure of 100 $\pm$ 5 kPa.

All the TV equipment contained in the radio and television complex should provide a formulated complete color TV signal at the output according to

GOST [State Standard] 19432-74; all the sound apparatus contained in the radio and television complex should correspond to GOST 11515-75 and all the audio tape recorders should correspond to GOST 12107-74. The picture channel and channel parameters should correspond to GOST 19871-74.

All the TV equipment should operate in the centralized synchronization mode, i.e., from a single reference generator.

The third-generation apparatus developed in the Soviet Union, on the basis of which all the OTRK equipment was developed, has a number of distinguishing features: high electrical parameters, for example, working illumination of 700 lx at an object, signal/noise ratio of more than 45 dB, nonuniform amplitude-frequency characteristic and working frequency band of $\pm$ 7 percent; the accuracy of maintaining the output signal level is $\pm$ 3 percent. High stability throughout the long operating period could be achieved in the developed apparatus (retention of the "white" noise balance in the cameras for 22 hours, color subcarrier signal level and carrier color signal frequencies). Local parameter maintenance automation systems, for example, output signal level and raster matching in the camera, are used in the apparatus. The use of functionally new devices in the equipment complex (electronic rear projection, electronic clocks with counting of current and sports time, telebreather, putting subtitles into the picture, electric tending of the background and so on) permits a significant expansion of the creative and engineering capabilities provided by the equipment.

Integrated microcircuits are used extensively in the apparatus. The average percentage of integration comprises 65-70, while it is close to 100 percent in pulsed circuits and approximately 40 percent in the amplifier channel. Reliability has been improved (a calculation showed that the single mean-time-between failures comprises 426 hours for the APB).

The comparative characteristics of the TV equipment which will be operated mainly at the Television Engineering Center imeni 50-Letiya Oktyabrya and which was used at the Olympics in Munich and Montreal, are presented in Tables 2 and 3. Table 2 requires no special explanation. However, it should be noted that the requirement of signal commutation from 150 inputs to 288 outputs while providing automatic bypass of a malfunctioning commutation point is rather rigid and satisfaction of this requirement led to development of a new commutation array.

Centralized synchronization of external sources permits planned mixing of signals from any sources encompassed by the centralized synchronization circuit, an increase of artistic perception of the pictures and exclusion of jerking of the pictures at the moment the sources are switched. Automatic maintenance of the level of a complete TV signal at the control room outputs permits a reduction of distortion due to maintenance of the given signal level pattern in the entire TV channel. Undesirable overloads of the input devices of radio transmitters, rebroadcast and cable communications lines are thus eliminated, which is especially important for maintaining high quality of the

Table 2. Functional Characteristics of TTTs and OTRK TV Complexes

Функциональные характеристики (1)	ТТЦ	ОТРК
Число формируемых программ (2)	8	20
Коммутационное поле центральной аппаратной (3)		
входы (4)	60	150
выходы (5)	90	288
Автоматический поиск и обход неисправной коммутационной точки (6)	нет (7)	есть (8)
Централизованная синхронизация внешних источников на спортсооружения Москвы и других городов (9)	нет	есть
Автоматическое поддержание уровня полного ТВ сигнала на выходах аппаратных (по уровню белого) (10)	нет	есть
Допусковый автоматизированный контроль параметров сигналов и трактов (11)	нет	есть
Электронная рирпроекция, раскрашивание фона и черно-белых надписей, введение отметок надписей и времени от электронных часов, показ текста выступающему (12)	нет	есть
Возможность наращивания оборудования для создания комплексов различного объема и назначения (13)	нет	есть
Соответствие базовой конструкции аппаратуры рекомендациям МЭК (14)	нет	есть
Время непрерывной работы, ч (15)	18	22

Key:

1. Functional characteristics
2. Number of formulated programs
3. Commutation field of central control room
4. Inputs
5. Outputs
6. Automatic search and bypass of malfunctioning commutation point
7. No
8. Yes
9. Centralized synchronization of external sources at sports facilities of Moscow and other cities
10. Automatic maintenance of the level of the complete TV signal at the outputs of the control rooms (according to the white noise level)
11. Permissible automated monitoring of signal and channel parameters
12. Electronic rear projection, changing the background and black-white recordings, introducing recording markers and the time from electronic clocks and displaying the text to the person talking
13. The possibility of increasing the equipment for development of complexes of different volume and designation
14. Matching the baseline design of the apparatus to MEK [International Electrotechnical Commission]
15. Continuous operating time, hr

color picture. Introduction of new functional devices (rear projection, color inscriptions, time markers, displaying texts to the speaker and so on) not only expends the operating capabilities of the creative personnel and improves artistic perception, but is also necessary for sports transmissions.

Table 3 also requires no explanation. But attention should be turned to the fact that the requirements on the new equipment are naturally higher. For example, whereas the operators were completely satisfied with tenfold varioobjectives several years ago, this multiplicity factor is now suitable only for studios. And 20- and 30-fold varioobjectives are required for transmissions to operators outside the studio.

Whereas such parameters as the differential phase and the differential amplification were previously not normalized, rather rigid standards have now been introduced for these two parameters -- 5° for the differential phase and 5 percent for differential amplification, based on the need to provide high quality of the color picture. With regard to expansion of the international volume of programs with countries utilizing different color TV systems, the need to reencode different systems in the signals with extensive use of videotape recordings sharply increased the requirements on the stability of the reference frequency of the synchronous generator. These rather high technical requirements on TV equipment required the application of extensive efforts from the developers in development.

A number of new functionally completed TV devices which correspond to all these requirements was developed as a result of the investigations and both standard (APB, PTS and PTVS) and TV equipment complexes specific for the Olympic Games were designed on their basis. Operating requirements were also taken into account in developing these complexes.

Based on the requirements of operational personnel, the control members on the channel consoles have been arranged with regard to the frequency of use; the efforts required to push the buttons of push-button switches have been sharply reduced, the number of control members has been reduced and a number of control members have been transferred from cabinets to the consoles. The time required to prepare the apparatus for operation has been reduced.

Specially developed measuring devices with direct readout of the measured parameters using digital displays have been introduced in some complexes to maintain the required parameters during operation by evaluating the correctness of apparatus operation and timely regulation of it.

Automation components are used extensively in the apparatus developed for the OTRTs and the functional capabilities which facilitate the work of the creative personnel and which provide a modern level of technology of transmission preparation have been expanded. The automation devices are designed to facilitate the process of operation of both individual components of the apparatus and of the entire complex. However, the apparatus has become considerably more complex in design, circuitry and technological solutions

Table 3. Comparative Characteristics of TTTs and OTRK TV Equipment

Наименование технических характеристик (1)	ТТЦ	ОТРК
Рабочая освещенность объектов, лк (2)	1000—1500	700 1000
Отношение сигнал/шум, дБ, сигналов на выходах камерных каналов для (3)		
яркостного (4)	39	46
красного (5)	41	46
зеленого (6)	45	—
синего (7)	45	42
Кратность вариообъективов камер для (8)		
студий (9)	10	10
ПТС (10)	10	20—30
Размах полного ТВ сигнала, В (11)	1±0,5	1±0,03
Неравномерность ВАХ в полосе 0,5—6 МГц относительно частоты 1 МГц, % (12)	±10	±7
Стабильность опорной частоты синхрогенератора, Гц[1] (13)	10^{-8}	10^{-11}
Дифференциальная фаза, град[2] (14)	—	5
Дифференциальное усиление, %[2] (15)	—	5
Коэффициент нелинейных искажений сигнала яркости, %[2] (16)	—	5
Неравномерность плоской части импульсов частоты полей, %[2] (17)	—	2

[1] The reference frequency stability at the TTTs has now been brought up to 10^{-11}.

[2] These characteristics were not normalized on the TTTs.

Key:

1. Name of specifications
2. Working illumination of objects, lx
3. Signal/noise ratio, dB of signals at outputs of camera channels for
4. Brightness
5. Red
6. Green
7. Blue
8. Multiplicity factor of camera varioobjectives for
9. Studios
10. PTS
11. Scope of complete TV signal, V
12. Nonuniformity of voltage-ampere characteristics in the 0.5-6 MHz band with respect to frequency of 1 MHz percent
13. Stability of synchronous generator reference frequency, Hz
14. Differential phase, deg
15. Differential amplification, percent
16. Coefficient of nonlinear brightness signal distortions, percent
17. Nonuniformity of plane part of field frequency pulses, percent

because of this. To fully realize those capabilities which the apparatus potentially provides, the requirements on the level of qualifications of engineering and technical personnel of the OTRTs are not reduced, as it may appear at first glance, but have been significantly increased.

6521
CSO: 5500

BRIEFS

EARTH SATELLITE STATION--An earth satellite station which will link Sierra Leone with most countries of the world will be officially commissioned in November. The station will receive and transmit messages via the Atlantic Satellite, which is owned by the International Telecommunications Satellites Organisation based in Washington. The station, which is expected to ease communication during the OAU Summit to be held in Freetown next year, also has the capacity to receive live television coverages of major world events beamed at the Atlantic Satellite by major television companies. Mitsubishi Electric Company of Japan assisted with the installation of the earth station. [Text] [London WEST AFRICA in English 10 Sep 79 p 1674]

CSO: 5500

DETAILS ON TELECOMMUNICATIONS AID FROM NETHERLANDS GIVEN

Ouagadougou L'OBSERVATEUR in French 17-18 Aug 79 pp 7, 9

[Text] Yesterday at 4 o'clock an important consignment of telecommunications equipment was presented by the Netherlands in our country and officially accepted in the general warehouse of the OPT (Postal and Telecommunications Service).

The prime minister, Dr Joseph Conombo, the president of the National Assembly, Gerard K. Ouedraogo, several members of the government, the diplomatic corps and many important nationals and foreigners were present.

The Netherlands charge d'affaires was the first to speak and made the following speech:

It is a great honor for me today to deliver, in the name of our ambassador, an important part of the total material furnished to the OPT in the cadre of Netherlands-Voltan cooperation.

This covers only one portion.

The OPT, noted for its dynamism and efficiency, has already installed a good part of this equipment even before it was delivered.

A summary of the Netherlands subsidies to the OPT is roughly as follows:

A subsidy in 1977 in the amount of 570 million F CFA
in 1978 " " " " 640 million F CFA
in 1979 " " " " 440 million F CFA
for a total of more than 1,6 billion F CFA

These funds were used by OPT for the purchase of, among other materials, a frequency control installation and a number of DAF trucks, some equipped with cranes and others with bucket elevators.

Postal office material was also purchased.

And,of course, the OPT purchased the equipment which you see around you, terminals, adjusters (large model), clamping plates (small model), three-bolt plates, IPN diagonal clamping straps, and finally some rather mysterious and amorphous equipment which, however, will soon permit an important expansion of the Upper Voltan telephone network.

The leading supplier was Philips enterprise. Philips is, perhaps, best known for its lamps and television apparatus. However, it is becoming increasingly known for its expertise in the field of telecommunications, especially since it has been carrying out a telecommunication project valued at more than 600 billion F CFA in conjunction with the Ericson-Bell enterprise in the Saudi Arabian Kingdom.

Other suppliers are, of course, DAF trucks, Berkel International and Marchand-Andriessen.

Mr Prime Minister, unfortunately it seems to me that negotiations between these enterprises and the OPT end rather badly somehow.

That is to say, badly for Netherlands enterprises.

Apparently, the director general of OPT and his deputy, Mr Zongo, have proven to be very capable, very astute, and also very difficult to satisfy.

(My congratulations to OPT).

OPT defends its interests very well but not only its own interests; it defends those of the entire country.

Obviously, it is true that an adequate system of communications is an important element in the rapid and harmonious development of Upper Volta.

For this reason I sincerely hope that this contribution from the Netherlands to OPT will be fruitful.

Next it was OPT's minister, Paul Ismael Ouedraogo's turn to speak, after having thanked the notables who were present: Mr Prime Minster, the president of the National Assembly, madam and ministers, Upper Volta's OPT has been privileged in receiving this exceptional aid in the cadre of the cooperation between the Netherlands and Voltan governments.

The year 1977 marked in particular the start of the implementation of this aid to OPT, which has amounted to 570 million in 1977, 640 million in 1978 and finally 440 million francs CFA for the current year, which represents a cumulative subsidy of 1 billion, 650 million of our francs (1,650,000,000). It is surely the most important aid ever received and it is fitting to place this operation in the framework of the goodwill of the Netherlands authorities to contribute to the socioeconomic development of a country rated among the poorest in the world.

In order to remain faithful to this spirit, the OPT has decided to devote the entire equipment received to intensify its efforts towards opening its country's barriers, especially in the rural zones: therefore, more than 1,000 km connections will be carried out.

The following centers will be involved:

Diapaga-Arly; Tenkodogo-Ouargaye-Sanga; Tenkodogo-Ditou; Fada-Diabo; Boulsa-Pouytenga; Safane-Dedougou; Tougan-Dian-Kassoum; Nouna-Solenzo; Nouna-Djibasso; Banfora-Niangoloko; Bobofo-N'Dorola; Kaya-Doulsa-Pouytenga; and Bogande-Fada.

Among the equipment which has been put at our disposal the logistic appliances and extension cables will enable us to reinforce the Koudougou, Ouahigouya, Banfora and Fada N'Gourma network while the acquisition of telephone concentrators will make it possible to prevent the saturation phenomenon which has been evident in some districts of Ouagadougou.

In addition, the Netherlands have accorded to our request to promote postal disengagement in the country, in line with telecommunication activities, by the creation of a postal check center in Bobo-Dioulasso and by equipping the P and T offices for a total of 220 million. It is really the first time that a source of financing agrees to an outlay of this importance in such a social and unprofitable sector as is represented by the post office branch.

While repeating my regard and my gratitude to the authorities of the Netherlands, my department would like to assure you, Mr Prime Minister, and through you the chief of state, the Voltan nation as well as all the establishments, of its full availability to be of service to all. Unity, Labor and Justice, the OPT has not ceased to translate into reality this trilogy which is our national slogan.

While we have been working through the post office, the telephone and telex to weave viable ties between the various communities of the nation, we are helping to reduce the distances which separate one and all of us and establish better understanding and greater solidarity. Must we point out that the Upper Volta OPT which has been ranked among the highest national investors, employs more than 2,000 officials and in addition ensures regular increases in new employment.

Finally, in the cadre of our search for true justice we have always tried to place the various regions of the country on an equal basis as regards the distribution of our services.

As charge d'affaires for the royal embassy of the Netherlands, please be assured that your concern for my department is and will always be welcome and taken into account. On this solemn occasion, I would like to request that you convey to Her Majesty Queen Juliana of the Kingdom of the Netherlands, our profound gratitude for her solicitous attention.

Long live Voltan-Netherlands friendship!

Long live international cooperation!

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BRIEFS

COUNTER SA PROPAGANDA PROGRAM--The Party and its Government have been urged to install a radio booster in Western Province to counter malicious propaganda by Radio South Africa. This is one of the resolutions passed by the provincial conference held at Mbanyutu, near Kaoma at the weekend. [Excerpt] [Lusaka TIMES OF ZAMBIA in English 12 Sep 79 p 5]

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